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DAFFER MCDANIEL LLP
P.O. BOX 684908
AUSTIN, TX 78768

EXAMINER
KISS, ERIC B

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 April 2007</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   The reply filed April 27, 2007, has been received and entered. Claims 1-20 are pending.

Response to Amendment

2.   Applicant's amendment to the specification appropriately addresses the objection based on the hyperlink in the specification, and accordingly this objection is withdrawn.

3.   Applicant's amendments to the specification do not appropriately address the objection based on usage of trademarks. Specifically, applicant has failed to accompany trademarks with corresponding generic terminology (*i.e.*, using trademarks as adjectives modifying descriptive nouns). Accordingly, this objection is maintained. Further, "Sun Microsystems," where used as the name of the company itself and not as a label for its products, should not be labeled with a trademark designation ("TM").

4.   Applicant's amendments to the claims appropriately addresses the rejection of claims 4 and 5 under 35 U.S.C. § 112, second paragraph, and accordingly this rejection is withdrawn.

5.   Applicant's amendments to claims 14 and 17 do not clearly and unambiguously recite the necessary functional and structural interrelationship between the software elements and the remaining elements of a computer. Specifically, the computer-readable medium "having" a particular environment does not necessarily imply storage of an executable program capable of causing a computer to carry out the described functionality. Accordingly, the rejection under 35 U.S.C. § 101 is maintained.

Response to Arguments

6.   Applicant's arguments filed April 27, 2007, have been fully considered but they are not persuasive.

Swamy discloses generating an executable dataflow application (see, e.g, col. 2, lines 58-64 ("The invention takes a user-defined mapping between a source schema representing the definition of a source document, and a target schema representing a target document, and compiles the mapping into code for execution in a computer system."). Swamy further discloses a map component performing a respective data transformation (see, e.g., elements 356, 358, and 360 of Fig. 11, which transform input data into output data through multiplication and addition operations).

Specification

7.   The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

The use of trademarks, such as JAVA, has been noted in this application. Trademarks should be capitalized wherever they appear (capitalize each letter or accompany each trademark with an appropriate designation symbol, *e.g.*, ™ or ®) and be accompanied by the generic terminology (use trademarks as adjectives modifying a descriptive noun).

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 101

8.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9.   Claims 14-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data. Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*. *In re Warmerdam*, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1760 (claim to a data structure per se held nonstatutory).

Data structures not claimed as embodied in computer-readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. *See, e.g., In re Warmerdam*, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

Similarly, computer programs claimed as computer listings per se, *i.e.*, the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. *See In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035.

Claims 14-20 recite a "system" and an "environment" comprising a series of elements that can be reasonably interpreted as software, *per se*. The claims further recite a computer-readable medium "having" such elements. Claims 14 and 17 do not clearly and unambiguously recite the necessary functional and structural interrelationship between the software elements and the remaining elements of a computer. Specifically, the computer-readable medium "having" a particular environment does not necessarily imply storage of an executable program capable of causing a computer to carry out the described functionality. Accordingly, it is not clear that claims 14 and 17 recite more than functional descriptive material or whether such descriptive material is necessarily encoded in a manner sufficient to imply the necessary functional and structural interrelationship so to recite statutory subject matter.

10.   To expedite a complete examination of the instant application, the claims rejected under

35 U.S.C. §101 (non-statutory) above are further rejected as set forth below in anticipation of

Applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 102

11.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12.   Claims 1, 2, 4-14, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by

U.S. Patent No. 6,874,141 (Swamy et al.).

As per claim 1, *Swamy et al.* discloses:

developing one or more data transformations using a host language (see, e.g., col. 2, line

58, through col. 3, line 7, describing the overall schema mapping);

assembling several data transformations having ports into a map component with links

between ports using a declarative language for static assemblage and a host language for

dynamic assemblage (see, e.g., Figs. 11-14 (illustrating example mappings with links)), wherein

a map component performs a respective data transformation (see, e.g., elements 356, 358, and

360 of Fig. 11, which transform input data into output data through multiplication and addition

operations);

compiling one or more map components with syntactic and semantic analysis (see, e.g.,

Fig. 1 (describing the overall compilation process); col. 6, lines 34-39); and

synthesizing the compiled map components into an executable dataflow application

including removing the design time links between ports (see, e.g., Fig. 1, describing the overall

compilation process; Fig. 10 (freeing the node dependencies memory)).

As per claim 2, *Swamy et al.* further discloses the steps of creating an executable

dataflow application comprising:

synthesizing a hierarchical map component (see, e.g., Fig. 4A; Fig. 11);

flattening the hierarchical map component (see, e.g., col. 10, lines 4-12; Fig. 5C (. . .

compiler link option is flattening . . .)); and

determining the executable dataflow application using the flattened hierarchical

map component in conjunction with runtime properties (see, e.g., col. 10, lines 4-12; Fig. 5C

(flattening); Fig. 1 (describing the overall compilation process)).

As per claim 4, *Swamy et al.* further discloses the host language for data transformation

logic being an object-oriented programming language (see, e.g., col. 7, lines 3-8).

As per claim 5, *Swamy et al.* further discloses some of the map components

implementing dynamic assemblage logic implemented in an object-oriented programming

language (see, e.g., col. 7, lines 3-8).

As per claim 6, *Swamy et al.* further discloses some of the map components comprising a

plurality of other map components arranged hierarchically (see, e.g., Figs. 11-14 (illustrating

example mappings with hierarchical components)).

As per claim 7, *Swamy et al.* further discloses some of the map components being static which consistently generate the same hierarchical map (see, e.g., Figs. 14 (illustrating an example mapping); col. 17, line 51, through col. 19, line 6 (illustrating direct copying of some mapped information from the source to the target)).

As per claim 8, *Swamy et al.* further discloses some of the map components being dynamic to generate different hierarchical maps dependent on properties and dynamic logic (see, e.g., col. 14, line 29, through col. Col. 15, lines 52 (describing the application of mathematical logic to produce results dependent on the properties of the source data)).

As per claim 9, *Swamy et al.* further discloses the dynamic map components receiving information concerning properties, port types, and dataflow graph implementation and configuring its properties and internal dataflow graph implementation based on said received information (see, e.g., col. 15, lines 53-67).

As per claim 10, *Swamy et al.* further discloses one or more of the map components having interface and implementation properties (see, e.g., col. 15, lines 53-67).

As per claim 11, *Swamy et al.* further discloses some of the map components ports configured for sending data and some configured for receiving data (see, e.g., Fig. 11 (left and right side, respectively, of the individual mapping components)).

As per claim 12, *Swamy et al.* further discloses some of the ports being typed based on the type of data conveyed (see, e.g., Fig. 11 (the mathematical operations are designed to map numerical data)).

As per claim 13, *Swamy et al.* further discloses some of the ports being composite, comprising a plurality of hierarchical ports (see, e.g., Fig. 11 (multiple inputs/outputs to the mapping functions)).

As per claim 14, *Swamy et al.* discloses:

a library of components, some of the components being scalar and comprising a data transformation, some of the components being composite, and comprising a hierarchy of other components representing data transformations (see, e.g., Figs. 11-14 (illustrating example mappings with hierarchical components));

a compiler to develop and assemble components into an executable dataflow application linking components subject to schema and properties constraints (see, e.g., Fig. 1 (describing the overall compilation process); col. 6, lines 34-39; col. 2, lines 58-64 ("The invention takes a user-defined mapping between a source schema representing the definition of a source document, and a target schema representing a target document, and compiles the mapping into code for execution in a computer system."));

an executor which executes the dataflow application in parallel (see, e.g., col. 6, lines 34-39); and

tools for accessing the functionality of the compiler, executor and component library (see, e.g., Figs. 1, 2, and 15).

As per claim 16, *Swamy et al.* discloses some of the components including ports for accepting and producing data whereby the map components are linked (see, e.g., the illustrated mappings of Figs. 11-14; Fig. 11 (left and right side, respectively, of the individual mapping components)).

Claim Rejections - 35 USC § 103

13.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

14.   Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 6,874,141 (Swamy et al.) in view of U.S. Patent No. 6,947,947 (Block et al.).

As per claims 3 and 15, although *Swamy et al.* fails to expressly disclose encrypting the

dataflow graphs prior to the step of compiling the map component, *Block et al.* teaches the use of

an encryption/decryption mechanism as part of a proprietary transformation (see, e.g., *Block et

al.* at col. 6, line 44, through col. 7, line 13). Therefore, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to utilize such encrypted proprietary

transformations as a means of securing the transfer of transformed data over a network such as

the Internet (see, e.g., *Block et al.* at col. 6, line 44, through col. 7, line 13).

15.   Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent

No. 6,874,141 (Swamy et al.) in view of U.S. Patent No. 6,449,619 (Colliat et al.).

As per claim 17, *Swamy et al.* discloses:

A dataflow application development environment where map components are selected

from a plurality of reusable map components each representing one or more data transformations

(see, e.g., Figs. 11-14 (illustrating example mappings with hierarchical components)), the

selected map components being visually assembled into a dataflow application (see, e.g., Figs. 11-14; col. 6, lines 34-39).

Swamy et al. further discloses at least some of the components being scalar components (see, e.g., *Swamy et al.* at col. 13, line 31, through col. 14, line 10), but fails to expressly disclose the recognition of patterns of parallelism and assigning of a number of threads to respective transformations and executing each scalar component on a separate thread. However, *Colliat et al.* teaches such multithreaded parallel transformation (see, e.g., *Colliat et al.* at col. 2, lines 43-62). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize such parallel techniques as taught by *Colliat et al.* in order to gain the advantage of more efficient execution (see, e.g., *Colliat et al.* at col. 2, lines 43-62).

As per claim 18, *Swamy et al.* further discloses the map components defining properties affecting design behavior (see, e.g., col. 14, line 29, through col. Col. 15, lines 52 (describing the application of mathematical logic to produce results dependent on the properties of the source data)). Therefore, for reasons stated above, such a claim also would have been obvious.

As per claim 19, *Swamy et al.* further discloses the map components defining properties affecting execution behavior (see, e.g., col. 14, line 29, through col. Col. 15, lines 52 (describing the application of mathematical logic to produce results dependent on the properties of the source data)). Therefore, for reasons stated above, such a claim also would have been obvious.

As per claim 20, *Swamy et al.* further discloses the map components being assembled using ports for conveying data and declared as link points to other map components (see, e.g.,

Fig. 11 (left and right side, respectively, of the individual mapping components)). Therefore, for reasons stated above, such a claim also would have been obvious.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric B. Kiss whose telephone number is (571) 272-3699. The Examiner can normally be reached on Tue. - Fri., 7:00 am - 4:30 pm. The Examiner can also be reached on alternate Mondays.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Tuan Dam, can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

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like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry of a general nature should be directed to the TC 2100 Group receptionist:

571-272-2100.

Eric B. Kiss
Primary Patent Examiner
January 2, 2008